

WHAT IS CLAIMED IS:

1. A semiconductor chip, comprising:
a semiconductor substrate;
terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor substrate, each of the groups including a plurality of terminals; and
an integrated circuit formed on the semiconductor substrate,
the plurality of terminals in each of the groups being arranged in accordance with a predetermined basic terminal arrangement,
each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point, and
each of the groups including same-function terminals to achieve the same function at the same positions of the basic terminal arrangement.
2. The semiconductor chip according to Claim 1, the same-functional terminals of each of the groups being electrically coupled to each other.
3. The semiconductor chip according to Claim 1,
each of the groups including a group of contact/non-contact terminals at a same positions group of the basic terminal arrangement, the group of contact/non-contact terminals including a contact terminal that is electrically coupled to a same-function circuit, and non-contact terminals that are electrically isolated from the same-functional circuit, and
the contact terminal being disposed at a different position of the basic terminal arrangement for each of the groups.
4. The semiconductor chip according to Claim 3, wherein the contact terminal of each of the groups being electrically coupled to each other.
5. The semiconductor chip according to Claim 3, the number of terminals of the group of contact/non-contact terminals being equal to or larger than the number of the groups.
6. The semiconductor chip according to Claim 3, the non-contact terminals being electrically isolated from the integrated circuit.
7. The semiconductor chip according to Claim 1,
the integrated circuit including a converter, the converter including B conversion input parts (B is an integer equal to or larger than 2 (two)) and having the function of selecting at least one signal among a group of predetermined output signals of the same kind in response to an input signal input to the conversion input parts,
the terminals of the groups including C conversion terminals (C is an integer equal to or larger than 2 (two)) that are electrically coupled to the conversion input parts,

each of the conversion terminals being electrically coupled to one of the conversion input parts, and

each of the groups including the conversion terminals in the number of C/A at the same positions of the basic terminal arrangement.

8. The semiconductor chip according to Claim 7,
the conversion terminals in the number of C/A in each of the groups including D first conversion terminals (D is a natural number) that are electrically coupled to each other, and

each of the groups including the first conversion terminals at the same positions of the basic terminal arrangement.

9. The semiconductor chip according to Claim 8,
 B is a number other than a number divisible by A , and
 D is a remainder that results from the division of B by A .

10. The semiconductor chip according to Claim 7,
the conversion terminals in the number of C/A in each of the groups including second conversion terminals that are electrically isolated from any other conversion terminals, and

each of the groups including the second conversion terminals at the same positions of the basic terminal arrangement.

11. The semiconductor chip according to Claim 1,
the integrated circuit including an element array that has a plurality of elements having the same function, and E element-array input parts (E is an integer equal to or larger than 2 (two)) for each being electrically coupled to any of the elements,
the terminals of the groups including F element-array terminals (F is an integer equal to or larger than 2 (two)) that are electrically coupled to the element-array input parts, and

each of the groups including the element-array terminals in the number of F/A at the same positions of the basic terminal arrangement.

12. The semiconductor chip according to Claim 11,
the element-array terminals in the number of F/A in each of the groups including G first element-array terminals (G is a natural number) that are electrically coupled to each other, and

each of the groups including the first element-array terminals at the same positions of the basic terminal arrangement.

13. The semiconductor chip according to Claim 12,
E is a number other than a number divisible by A, and
G is a remainder that results from the division of E by A.
14. The semiconductor chip according to Claim 11,
the element-array terminals in the number of F/A in each of the groups
including second element-array terminals that are electrically isolated from any other element-
array terminals, and
each of the groups including the second element-array terminals at the same
positions of the basic terminal arrangement.
15. A semiconductor chip, comprising:
a semiconductor substrate;
terminals of A groups (A is an integer equal to or larger than 2 (two)) formed
on the semiconductor substrate, each of the groups including a plurality of terminals; and
an integrated circuit formed on the semiconductor substrate,
the plurality of terminals in each of the groups being arranged in accordance
with a predetermined basic terminal arrangement,
each of the groups being disposed at each of positions that are defined by
rotating one of the positions around a point,
each of the groups including a group of contact/non-contact terminals at a
same positions group of the basic terminal arrangement, the group of contact/non-contact
terminals including a contact terminal that is electrically coupled to a same-function circuit,
and non-contact terminals that are electrically isolated from the same-function circuit, and
the contact terminal being disposed at a different position of the basic terminal
arrangement for each of the groups.
16. The semiconductor chip according to Claim 15, the contact terminal of each of
the groups being electrically coupled to each other.
17. The semiconductor chip according to Claim 15, the number of terminals of the
group of contact/non-contact terminals being equal to or larger than the number of the A
groups.
18. The semiconductor chip according to Claim 15, the non-contact terminals
being electrically isolated from the integrated circuit.
19. The semiconductor chip according to Claim 15,
the integrated circuit including a converter, the converter including B
conversion input parts (B is an integer equal to or larger than 2 (two)) and having the function

of selecting at least one signal among a group of predetermined output signals of the same kind in response to an input signal input to the conversion input parts,

the terminals of the groups including C conversion terminals (C is an integer equal to or larger than 2 (two)) that are electrically coupled to the conversion input parts,

each of the conversion terminals being electrically coupled to one of the conversion input parts, and

each of the groups including the conversion terminals in the number of C/A at the same positions of the basic terminal arrangement.

20. The semiconductor chip according to Claim 19,

the conversion terminals in the number of C/A in each of the groups including D first conversion terminals (D is a natural number) that are electrically coupled to each other, and

each of the groups including the first conversion terminals at the same positions of the basic terminal arrangement.

21. The semiconductor chip according to Claim 20,

B is a number other than a number divisible by A, and

D is a remainder that results from the division of B by A.

22. The semiconductor chip according to Claim 19,

the conversion terminals in the number of C/A in each of the groups including second conversion terminals that are electrically isolated from any other conversion terminals, and

each of the groups including the second conversion terminals at the same positions of the basic terminal arrangement.

23. The semiconductor chip according to Claim 15,

the integrated circuit including an element array that has a plurality of elements having the same function, and E element-array input parts (E is an integer equal to or larger than 2 (two)) for each being electrically coupled to any of the elements,

the terminals of the groups including F element-array terminals (F is an integer equal to or larger than 2 (two)) that are electrically coupled to the element-array input parts, and

each of the groups including the element-array terminals in the number of F/A at the same positions of the basic terminal arrangement.

24. The semiconductor chip according to Claim 23,

the element-array terminals in the number of F/A in each of the groups including G first element-array terminals (G is a natural number) that are electrically coupled to each other, and

each of the groups including the first element-array terminals at the same positions of the basic terminal arrangement.

25. The semiconductor chip according to Claim 24,
 E is a number other than a number divisible by A , and
 G is a remainder that results from the division of E by A .

26. The semiconductor chip according to Claim 23,
the element-array terminals in the number of F/A in each of the groups including second element-array terminals that are electrically isolated from any other element-array terminals, and

each of the groups including the second element-array terminals at the same positions of the basic terminal arrangement.

27. A semiconductor chip, comprising:
a semiconductor substrate;
terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor substrate, each of the groups including a plurality of terminals; and
an integrated circuit formed on the semiconductor substrate,
the plurality of terminals in each of the groups being arranged in accordance with a predetermined basic terminal arrangement,
each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,
the integrated circuit including a converter, the converter including B conversion input parts (B is an integer equal to or larger than 2 (two)) and having the function of selecting at least one signal among a group of predetermined output signals of the same kind in response to an input signal input to the conversion input parts,
the terminals of the groups including C conversion terminals (C is an integer equal to or larger than 2 (two)) that are electrically coupled to the conversion input parts,
each of the conversion terminals being electrically coupled to one of the conversion input parts; and
each of the groups including the conversion terminals in the number of C/A at the same positions of the basic terminal arrangement.

28. The semiconductor chip according to Claim 27,

the conversion terminals in the number of C/A in each of the groups including D first conversion terminals (D is a natural number) that are electrically coupled to each other; and

each of the groups including the first conversion terminals at the same positions of the basic terminal arrangement.

29. The semiconductor chip according to Claim 28,
 B is a number other than a number divisible by A , and
 D is a remainder that results from the division of B by A .

30. The semiconductor chip according to Claim 27,
the conversion terminals in the number of C/A in each of the groups including second conversion terminals that are electrically isolated from any other conversion terminals, and

each of the groups including the second conversion terminals at the same positions of the basic terminal arrangement.

31. The semiconductor chip according to Claim 27,
the integrated circuit including an element array that has a plurality of elements having the same function, and E element-array input parts (E is an integer equal to or larger than 2 (two)) for each being electrically coupled to any of the elements,
the terminals of the groups including F element-array terminals (F is an integer equal to or larger than 2 (two)) that are electrically coupled to the element-array input parts, and

each of the groups including the element-array terminals in the number of F/A at the same positions of the basic terminal arrangement.

32. The semiconductor chip according to Claim 31,
the element-array terminals in the number of F/A in each of the groups including G first element-array terminals (G is a natural number) that are electrically coupled to each other, and

each of the groups including the first element-array terminals at the same positions of the basic terminal arrangement.

33. The semiconductor chip according to Claim 32,
 E is a number other than a number divisible by A , and
 G is a remainder that results from the division of E by A .

34. The semiconductor chip according to Claim 31,

the element-array terminals in the number of F/A in each of the groups including second element-array terminals that are electrically isolated from any other element-array terminals, and

each of the groups including the second element-array terminals at the same positions of the basic terminal arrangement.

35. A semiconductor chip, comprising:
 a semiconductor substrate;
 terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor substrate, each of the groups including a plurality of terminals; and
 an integrated circuit formed on the semiconductor substrate,
 the plurality of terminals in each of the groups being arranged in accordance with a predetermined basic terminal arrangement,
 each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,
 the integrated circuit including an element array that has a plurality of elements having the same function, and E element-array input parts (E is an integer equal to or larger than 2 (two)) for each being electrically coupled to any of the elements,
 the terminals of the groups including F element-array terminals (F is an integer equal to or larger than 2 (two)) that are electrically coupled to the element-array input parts, and
 each of the groups including the element-array terminals in the number of F/A at the same positions of the basic terminal arrangement.

36. The semiconductor chip according to Claim 35,
 the element-array terminals in the number of F/A in each of the groups including G first element-array terminals (G is a natural number) that are electrically coupled to each other, and
 each of the groups including the first element-array terminals at the same positions of the basic terminal arrangement.

37. The semiconductor chip according to Claim 36,
 E is a number other than a number divisible by A , and
 G is a remainder that results from the division of E by A .

38. The semiconductor chip according to Claim 35,

the element-array terminals in the number of F/A in each of the groups including second element-array terminals that are electrically isolated from any other element-array terminals, and

each of the groups including the second element-array terminals at the same positions of the basic terminal arrangement.

39. The semiconductor chip according to Claim 1, the groups adjacent to each other being disposed at positions that are defined by rotating one of the positions around a point by an angle of $360/A$ degrees.

40. The semiconductor chip according to Claim 1, further comprising:
a plurality of through-electrodes provided through the semiconductor substrate, the through-electrodes are electrically coupled to the terminals of the groups.

41. A semiconductor device, comprising:
a plurality of stacked semiconductor chips having substantially the same structure,
each of the semiconductor chips including,
a semiconductor substrate,
terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor substrate, each of the groups including a plurality of terminals, and
an integrated circuit formed on the semiconductor substrate,
the plurality of terminals in each of the groups being arranged in accordance with predetermined basic terminal arrangement;
each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point;
each of the groups including same-function terminals to achieve the same function at the same positions of the basic terminal arrangement; and
the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and the terminals of the groups of top-to-bottom overlap each other, the terminals, which overlap, being electrically coupled to each other.

42. A semiconductor device, comprising:
a plurality of stacked semiconductor chips having substantially the same structure, each of the semiconductor chips including a semiconductor substrate, terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor

substrate, each of the groups including a plurality of terminals and an integrated circuit formed on the semiconductor substrate,

the plurality of terminals in each of the groups being arranged in accordance with a predetermined basic terminal arrangement,

each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point;

each of the groups including a group of contact/non-contact terminals at a same positions of the group of the basic terminal arrangement, the group of contact/non-contact terminals including a contact terminal that is electrically coupled to a same-function circuit and non-contact terminals that are electrically isolated from the same-function circuit;

the contact terminal being disposed at a different position of the basic terminal arrangement for each of the groups; and

the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and each of the semiconductor chips being rotated around the point by each of angles different from each other, and thereby the groups whose positions of the contact terminal in the basic terminal arrangement are different from each other overlap, the terminals, which overlap, being electrically coupled to each other.

43. A semiconductor device, comprising:

a plurality of stacked semiconductor chips having substantially the same structure, each of the semiconductor chips including a semiconductor substrate,

terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor substrate, each of the groups including a plurality of terminals and an integrated circuit formed on the semiconductor substrate,

the plurality of terminals in each of the groups being arranged in accordance with predetermined basic terminal arrangement,

each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point;

the integrated circuit includes a converter, the converter including B conversion input parts (B is an integer equal to or larger than 2 (two)) and having the function of selecting at least one signal among a group of predetermined output signals of the same kind in response to an input signal input to the conversion input parts,

the terminals of the groups including C conversion terminals (C is an integer equal to or larger than 2 (two)) that are electrically coupled to the conversion input parts,

each of the conversion terminals being electrically coupled to one of the conversion input parts;

each of the groups including the conversion terminals in the number of C/A at the same positions of the basic terminal arrangement, and

the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and the terminals of the groups of top-to-bottom overlap each other, the terminals, which overlap, being electrically coupled to each other.

44. A semiconductor device, comprising:

a plurality of stacked semiconductor chips having substantially the same structure each of the semiconductor chips including a semiconductor substrate, terminals of A groups (A is an integer equal to or larger than 2 (two)) formed on the semiconductor substrate, each of the groups including a plurality of terminals and an integrated circuit formed on the semiconductor substrate;

the plurality of terminals in each of the groups being arranged in accordance with predetermined basic terminal arrangement,

each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,

the integrated circuit including an element array that has a plurality of elements having the same function, and E element-array input parts (E is an integer equal to or larger than 2 (two)) for each being electrically coupled to any of the elements;

the terminals of the groups including F element-array terminals (F is an integer equal to or larger than 2 (two)) that are electrically coupled to the element-array input parts,

each of the groups including the element-array terminals in the number of F/A at the same positions of the basic terminal arrangement; and

the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and the terminals of the groups of top-to-bottom overlap each other, the terminals, which overlap, being electrically coupled to each other.

45. A circuit board where the semiconductor chip according to Claim 1 is mounted.

46. A circuit board where the semiconductor device according to Claim 41 is mounted.

47. Electronic equipment that includes the semiconductor chip according to Claim 1.

48. Electronic equipment that includes the semiconductor device according to Claim 41.

49. A method of manufacturing a semiconductor device, comprising:
 aligning a plurality of semiconductor chips that have substantially the same structure with each other; and
 stacking the plurality of semiconductor chips,
 each of the semiconductor chips including a semiconductor substrate, terminals of A groups (A is an integer equal to or larger than 2 (two)) that are formed on the semiconductor substrate, each of the groups including a plurality of terminals and an integrated circuit that is formed on the semiconductor substrate,
 the plurality of terminals in each of the groups being arranged in accordance with predetermined basic terminal arrangement,
 each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,
 each of the groups including same-function terminals to achieve the same function at the same positions of the basic terminal arrangement; and
 the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and the terminals of the groups of top-to-bottom overlap each other, in the aligning.

50. A method of manufacturing a semiconductor device, comprising:
 aligning a plurality of semiconductor chips that have substantially the same structure with each other; and
 stacking the plurality of semiconductor chips, each of the semiconductor chips including a semiconductor substrate, terminals of A groups (A is an integer equal to or larger than 2 (two)) that are formed on the semiconductor substrate, each of the groups including a plurality of terminals of the terminals, and an integrated circuit that is formed on the semiconductor substrate,
 the plurality of terminals in each of the groups being arranged in accordance with a predetermined basic terminal arrangement;
 each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,

each of the groups including a group of contact/non-contact terminals at a same positions group of the basic terminal arrangement, the group of contact/non-contact terminals including a contact terminal that is electrically coupled to a same-function circuit, and non-contact terminals that are electrically isolated from the same-function circuit,

the contact terminal being disposed at a different position of the basic terminal arrangement for each of the groups, and

the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and each of the semiconductor chips is rotated around the point by each of angles different from each other, and thereby the groups whose positions of the contact terminal in the basic terminal arrangement are different from each other overlap, in the aligning.

51. A method of manufacturing a semiconductor device, comprising:

aligning a plurality of semiconductor chips that have substantially the same structure with each other; and

stacking the plurality of semiconductor chips, each of the semiconductor chips including a semiconductor substrate, terminals of A groups (A is an integer equal to or larger than 2 (two)) that are formed on the semiconductor substrate, each of the groups including a plurality terminals, and an integrated circuit that is formed on the semiconductor substrate,

the plurality of terminals in each of the groups being arranged in accordance with predetermined basic terminal arrangement,

each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,

the integrated circuit including a converter, the converter including B conversion input parts (B is an integer equal to or larger than 2 (two)) and having the function of selecting at least one signal among a group of predetermined output signals of the same kind in response to an input signal input to the conversion input parts,

the terminals of the groups including C conversion terminals (C is an integer equal to or larger than 2 (two)) that are electrically coupled to the conversion input parts,

each of the conversion terminals being electrically coupled to one of the conversion input parts,

each of the groups including the conversion terminals in the number of C/A at the same positions of the basic terminal arrangement; and

the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and the terminals of the groups of top-to-bottom overlap each other, in the aligning.

52. A method of manufacturing a semiconductor device, comprising:

aligning a plurality of semiconductor chips that have substantially the same structure with each other; and

stacking the plurality of semiconductor chips, each of the semiconductor chips including a semiconductor substrate, terminals of A groups (A is an integer equal to or larger than 2 (two)) that are formed on the semiconductor substrate, each of the groups including a plurality of terminals, and an integrated circuit that is formed on the semiconductor substrate,

the plurality of terminals in each of the groups being arranged in accordance with predetermined basic terminal arrangement,

each of the groups being disposed at each of positions that are defined by rotating one of the positions around a point,

the integrated circuit including an element array that has a plurality of elements having the same function, and E element-array input parts (E is an integer equal to or larger than 2 (two)) for each being electrically coupled to any of the elements,

the terminals of the groups including F element-array terminals (F is an integer equal to or larger than 2 (two)) that are electrically coupled to the element-array input parts,

each of the groups including the element-array terminals in the number of F/A at the same positions of the basic terminal arrangement; and

the plurality of semiconductor chips being disposed so that the point of each of the semiconductor chips coincides with each other and the terminals of the groups of top-to-bottom overlap each other, in the aligning.